

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)	
)	
Expanding the Economic and Innovation)	Docket No. 12-268
Opportunities of Spectrum Through Incentive)	
Auctions)	

To: Federal Communications Commission
(Filed electronically through ECFS)

COMMENTS OF CP COMMUNICATIONS PA, LLC

1. Introduction. CP Communications PA, LLC (“CP Communications” or “Company”) hereby submits these comments in response to the Federal Communications Commission’s (“FCC’s” or “Commission’s”) Notice of Proposed Rulemaking released on October 2, 2012 in the above-captioned proceeding.¹ CP Communications is a leading source for the rental of production communications equipment--including wireless microphones--to the broadcast, theatrical, live event, film, corporate, entertainment and other industries.² CP Communications’ clientele also rely on its expertise in coordinating technical aspects of an event’s communications needs such as, for example, RF-engineering for wireless microphone deployment purposes. As a result, CP Communications has developed first-hand knowledge of the technical, licensing, registration and spectrum availability issues surrounding wireless microphones and other low

¹ *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Notice of Proposed Rulemaking, 27 FCC Rcd 12357 (2012) (“*NPRM*”).

² It is important to note that many of these industries utilize wireless production equipment for the creation of valuable content to be consumed by the public through various outlets (e.g., broadband, cable broadcast, etc.).

power auxiliary station (“LPAS”) devices, including use of available space in the UHF television band.³ The Company’s comments are limited to issues in the *NPRM* related to LPAS Devices.⁴

2. Summary of Issues. LPAS Devices have become ubiquitous in entertainment and sports productions. The steps the Commission has taken to accommodate LPAS Device users are not yet sufficient to meet the need. There is still not access to sufficient spectrum to meet demand, especially in urban areas, and repacking of the TV broadcast band will further reduce spectrum availability. To eliminate the two reserved channels for LPAS Device usage would be to invite chaos and provide a strong incentive for users to circumvent or to ignore regulations – an age-old problem with wireless microphones that the Commission has recently tried to resolve but where it now appears to be backsliding.⁵ Finally, the Commission must be very cautious in attempting to increase efficiency through forced migration to digital equipment, because the latency, or time delay, inherent in digital technology, makes it unsuitable for audio applications where the performer must listen to the audio output.

3. Real-Time Transmission and Spectrum Availability. CP Communications understands that the upcoming effort to repack the television broadcast spectrum may result in up to 120 MHz, or about 50%, less UHF spectrum within which both LPAS Devices and “White Space” devices (“WSDs”) can operate. The reduction in availability will result in greater

³ For the discussion herein, wireless microphones and other LPAS devices will be referred to collectively as “LPAS Devices.”

⁴ The Company is also filing separate comments in the Commission’s proceeding on wireless microphones. *The Wireless Telecommunications Bureau and the Office of Engineering and Technology Seek to Update and Refresh Record in the Wireless Microphones Proceeding*, WT Docket Nos. 08-166, 08-167, ET Docket No. 10-24, Public Notice, 27 FCC Rcd 12067 (Wireless Telecom. Bur. and Office of Engineering and Technology 2012).

⁵ On the other hand, CP Communications supports permitting the use of LPAS Devices in the proposed guard bands.

competition for spectrum usage, especially in urban areas where available channels for LPAS Device usage are already scarce. The resulting congestion also means that real-time, high carrier-to-noise ratio (“CNR”) signals (*e.g.*, LPAS Devices) will suffer to a higher degree than those that can tolerate greater latencies, and by extension lower CNR (*e.g.*, WSDs). No matter what RF technological advances are made in LPAS Devices, *consistent* real-time transmission and reception will always be absolutely critical, as auditory unintelligibility can begin with latency (time delay) of as little as three milliseconds. Audio applications contrast with non-aural broadband applications, where users will easily accept, and may never really know about, a web page or email that takes an additional second or two to download.

4. Protection from WSDs. WSDs pose an obvious and serious threat to successful deployment of LPAS Devices. If hundreds, or thousands, of spectators at a venue are using spectrum for their wireless devices, that spectrum cannot be used for devices that are part of the production of the event. That is why spectrum must be made available for LPAS devices that is foreclosed to WSDs operating at or near the same location. CP Communications has recent experience operating both wireless microphones and wireless intercoms in the unlicensed 2.4 GHz band. Based on this experience, the Company believes it will be critically important for LPAS Devices to have a more certain level of interference protection from the mass of consumer WSDs. In situations where 2.4 GHz spectrum usage by consumer devices is not actively and deliberately restricted, the spectrum becomes so congested upon audience arrival that wireless production devices become virtually unusable. Because 2.4 GHz WiFi is so pervasive, and in many cases even mandated to be available to the audience by the venue or the production (this is in fact a policy of the National Football League), operating LPAS production equipment in this spectrum is almost always effectively—even if not technically—precluded in large scale events.

The anticipated proliferation of WSDs in the TV band is likely to present similar issues for LPAS Devices and negatively impact both capacity and real-time transmission needs. Because there are not yet large numbers of personal/portable WSDs in the market place, the current registration system for unlicensed LPAS Devices has not yet been fully proven to provide adequate protection from WSDs, especially from the aggregate effect of thousands of WSDs simultaneously operating at any given time and place.

5. Real-Time Transmission and Safety Issues. LPAS Devices do not only facilitate the presentation of entertainment. They are also used for real-time transmission and communication in aspects of production events that are very much actual life-safety circumstances. For example, production events could involve multi-ton set pieces moving about actors, actors or crew in active suspension (“flying” via a harness and hoist system), or the need for production management to warn personnel of severe weather, or other sudden dangers, at outdoor events. All of these safety issues often require the need for staff and other personnel to coordinate quickly (*i.e.*, in real-time) and with absolute reliability (*i.e.*, without interference) using LPAS Devices. Without adequate spectrum availability, real-time transmission and safety would be placed in jeopardy.

6. Technological and Economic Impediments to Spectrum Efficiency. Although it is certainly in both the Commission’s and the public’s interest to promote the most spectrally efficient transmission schemes possible, it is actually also in the best interests of wireless microphone users to at least the same degree, if not more so. Even today, before considering the upcoming loss of approximately 50% of the UHF TV spectrum, large scale events are increasingly experiencing spectrum shortages when using FM wireless products. As a general matter, manufacturers of many products are responding to the need for more efficiency with new

digital products that are proving to be far more spectrally efficient in terms of payload in a given occupied channel bandwidth (*e.g.*, digital television).

7. However, eliminating the two reserved channels for LPAS Device usage is still not feasible or prudent. Just as with the initial deployments of first generation digital cellular phones and digital land mobile radios ("LMR"), wireless microphone manufacturers and users are experiencing a learning curve of equipment and performance limitations regarding the specific needs of their customers. Audio applications require near-zero latency with a wide audio frequency response for both wireless microphones and in-ear monitors. So far digital equipment cannot fully meet this challenge. In the end, the laws of physics still dictate a minimum amount of spectrum required once these two parameters are defined as constants.

8. While microphone manufacturers have introduced some potentially viable first generation digital products, equivalent performance (latency and audio frequency response in this case) to the current crop of upper-tier FM based products comes at significantly higher prices, and performance is still in doubt. Between cost and performance issues, firms like CP Communications can presently utilize new digital offerings in only a small subset of deployments.⁶

9. All these factors together mean that a near term digital answer which simultaneously addresses the issues of spectral efficiency, latency, audio quality and price is not at all likely. Spectrum efficiency improvements will come only as quickly as technological advances and market economics permit. For this reason we ask that the Commission understand that

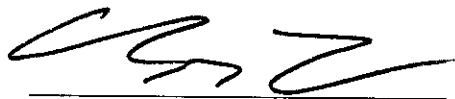
⁶ It is important to note that professional wireless equipment is unlike consumer wireless gear that usually replaced every few years and is designed, mass-manufactured, and priced accordingly. Professional equipment has a much longer useful life, is much more costly because of lower manufacturing volume, and must be purchased with a view toward relatively long-term usage.

mandating a new spectrum efficiency target is not a technically or economically simple task, and doing so in the near-term would likely present significant performance and economic issues for small companies involved in the manufacturer, usage and deployment of LPAS Devices.

10. Conclusion. CP Communications urges that the Commission refrain from eliminating the two reserved channels for LPAS Device usage, not to restrict LPAS operation on additional TV channels where necessary, and to take into account the specific needs and issues detailed above to ensure that any regulatory changes do not prevent the public from reaping the full benefits of LPAS Device usage.

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Respectfully submitted,



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